

PATENT SPECIFICATION

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(54) MOTOR VEHICLE BUMPERS OF PLASTICS MATERIAL

(71) We, STARS STAMPAGGIO RESINE SPECIALI S.P.A., an Italian Joint Stock Company, of Corso Savona 45, Villastellone, Turin, Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to bumpers for motor vehicles.

A disadvantage of traditional bumpers, which are made of sheet metal, is that they deform easily, even when subjected to minor impacts, and are not capable of dissipating a large amount of kinetic energy. In order to dissipate a large amount of energy it is necessary to resort to the use of special bumpers provided with kinetic energy dissipating devices of complex and expensive construction.

The object of the present invention is to provide a bumper which is capable of absorbing adequate amounts of kinetic energy without deformation, while being of simple and economic manufacture.

According to the present invention there is provided a bumper for motor vehicles, comprising an elongate unitary body of plastics material having a substantially U-shaped cross-section the central or base portion of which forms the front wall and a rear wall of the bumper and the side wings of which form upper and lower flanges, said flanges being connected together at their opposite ends by end flanges which form end continuations of the central portion, substantially the entire body being hollow to provide an internal cavity, the front and rear walls being united by welding of the base portion at a plurality of places to form ribs each of which is double the thickness of said walls for stiffening the bumper.

Further characteristics and advantages of the invention will become apparent in the course of the following detailed description, given by way of non-limiting example, with reference to the accompanying drawings, in which:

Figure 1 is a frontal perspective view of part of a motor vehicle bumper according to one embodiment of the invention;

Figure 2 is a perspective view of the bumper from the rear;

Figures 3 and 4 are cross-sections on an enlarged scale along the lines III—III and IV—IV respectively of Figure 2, and

Figure 5 is a partial longitudinal section on an enlarged scale, taken along the line V—V of Figure 2.

Referring to the drawings, the bumper according to the invention comprises an elongate unitary body 1 of plastics material. The body 1 is of a substantially U-shaped cross-section having a central base portion A which forms the front wall 2 and a rear wall 3 of the bumper and side wings B, C which form respective rearwardly projecting upper and lower edge flanges of the bumper. At the opposite ends of the bumper the wings B, C are connected together by vertical end flanges D which form continuations of the ends of the base portion A.

Substantially all parts of the bumper are hollow and 4 indicates the internal cavity. The bumper can for example be produced by extruding a tube of plastics material and completing the forming within a mould by blowing. Alternatively, the body 1 of the bumper can be formed by joining together two sheets of the same plastics material, welding the abutting edges of the sheets and then forming the bumper by blowing, or even by joining together two complementary separately moulded half-shells.

The body 1 of the bumper can be of straight or curved shape according to the shape of the vehicle surface on which it is to be mounted. The rear wall 3 of the base portion A of the bumper is welded in some regions to the front wall 2 so as to form longitudinally extending ribs 5 each of which is double the thickness of the walls 2 and 3 the ribs increasing the rigidity of the body and its resistance to bending and torsional stresses. The positioning of these

ribs 5 at regular intervals, as shown in Figure 2, provides a significant torsional and flexural rigidity, thus meeting a fundamental requirement in the operation of the bumper.

The double-walled base portion A has two areas 7 in which its two opposite walls are welded together in correspondence with two recesses on the rear face of the bumper. Two reinforcing plates 8 are fixed to the recessed areas 7 by means of screws 9 co-operating with nuts 10 for the purpose of fixing of the bumper to the bodywork of the motor vehicle.

Holes 11 are provided in the two end flanges D which, apart from being used for the blow-moulding of the body 1, can be used for introducing into the internal cavity of the body a synthetic expandable material, for example material of the polyurethane type. Upon expansion such material fills the cavity 4, interconnecting the internal faces of the walls defining the cavity 4, and ensuring greater stability of the cross-sectional shape of the bumper when flexural and torsional stresses are applied thereto. In order to obtain adhesion of the expanded material to materials such as for example, poly-olefines, which are known to have no affinity with most other synthetic resin materials, there can be introduced, during the blowing stage, a reinforcement of glass fibres or synthetic fibres which adhere to the internal surfaces of the hollow bumper body and thus provide a fixing base for the expanded material.

The external surface of the front wall 2 of the base portion A of the bumper is provided with a longitudinal channel 6 adapted to receive a decorative moulding 6a.

WHAT WE CLAIM IS:—

1. A bumper for motor vehicles, comprising an elongate unitary body of plastics material having a substantially U-shaped cross-section the central or base portion of which forms the front wall and a rear wall of the bumper and the side wings of which form upper and lower flanges, said

flanges being connected together at their opposite ends by end flanges which form end continuations of the central portion, substantially the entire body being hollow to provide an internal cavity, the front and rear walls being united by welding of the base portion at a plurality of places to form ribs each of which is double the thickness of said walls for stiffening the bumper.

2. A bumper according to Claim 1, formed by the extrusion of a tubular body and subsequent blowing of the body within a mould.

3. A bumper according to Claim 1, formed by blowing within a mould a tubular body made by connecting together two sheets of the said plastics material.

4. A bumper according to Claim 1, formed by joining together two separately moulded complementary half-shells.

5. A bumper according to any one of Claims 1 to 4, in which the base portion has, at opposite ends, areas in which its two walls are fused together to provide zones by which the bumper can be fixed to the bodywork of a motor vehicle.

6. A bumper according to any one of the preceding Claims, in which the external surface of the front wall of the bumper body has a longitudinal channel adapted to receive a decorative moulding.

7. A bumper according to any one of the preceding Claims, in which the internal cavity of the hollow bumper body is filled with an expanded synthetic material.

8. A bumper according to Claim 7, in which the internal surfaces of the cavity of the hollow bumper body are covered with glass or like fibres to assist the adhesion of the expanded material to the said surfaces.

9. A motor vehicle bumper substantially as herein described with reference to and as shown in the accompanying drawings.

For the Applicants,
F. J. CLEVELAND & CO.,
Chartered Patent Agents,
Lincoln's Inn Chambers,
40—43, Chancery Lane,
London, WC2A 1JQ.

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FIG. 1

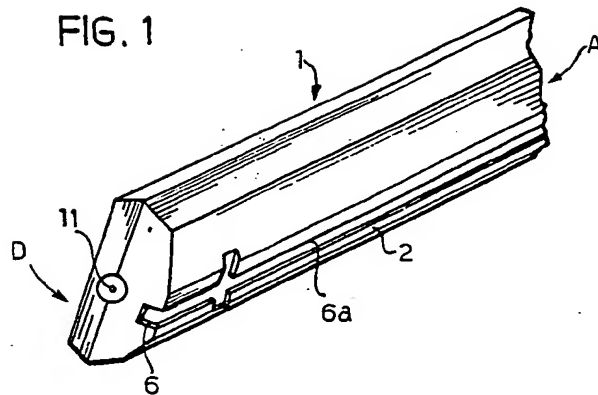


FIG. 3

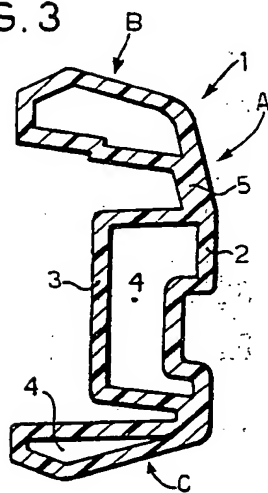
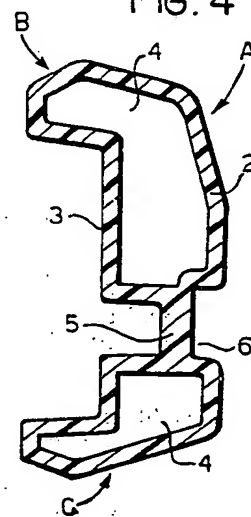


FIG. 4



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COMPLETE SPECIFICATION

2 SHEETS

*This drawing is a reproduction of
the Original on a reduced scale*

Sheet 2

FIG. 2

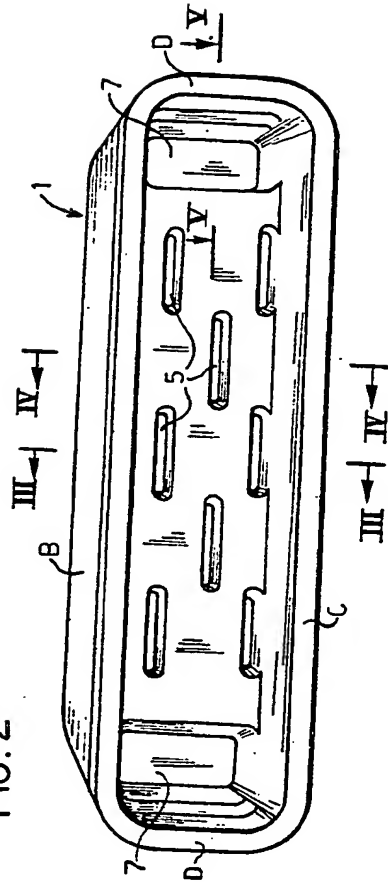


FIG. 5

